BOSTON PUBLIC LIBRARY
3 9999 06584 286 4

BOSTON
PUBLIC
LIBRARY

Digitized by the Internet Archive
in 2011 with funding from
Boston Public Library

http://www.archive.org/details/buildingnewecono00bost

gov 92-1358

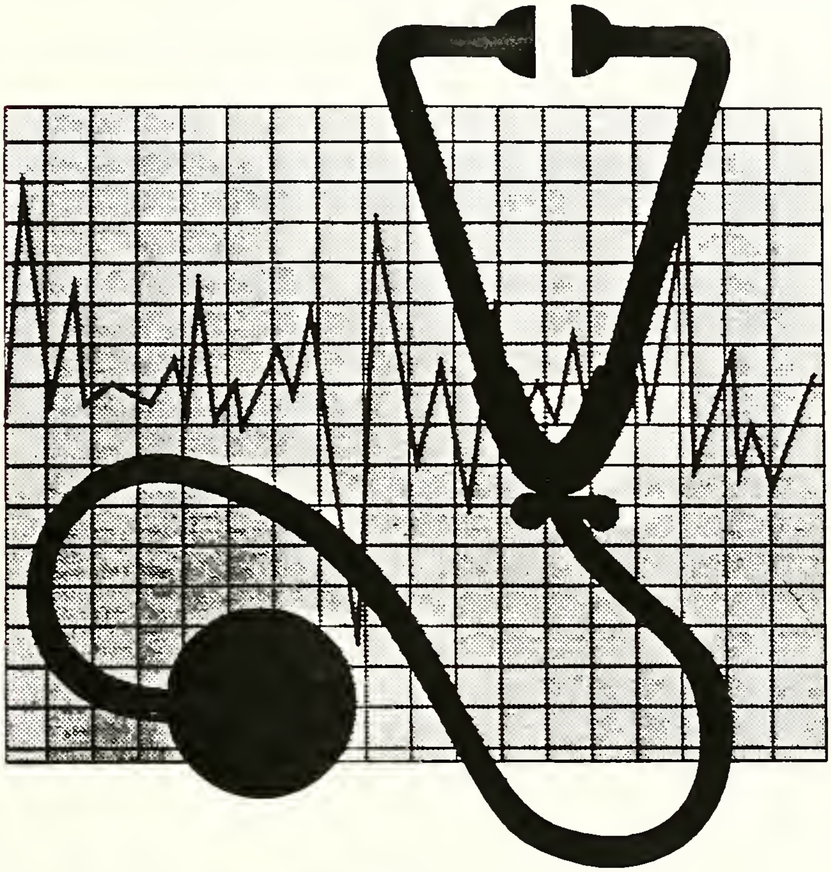
GOVDOC
BRA
4108

BOSTON PUBLIC LIBRARY

BUILDING THE NEW ECONOMY

HEALTH CARE PROJECTS FOR BOSTON

1992



CITY OF BOSTON
RAYMOND L. FLYNN, MAYOR

BOSTON REDEVELOPMENT AUTHORITY
THEODORE S. CHANDLER, Acting Director
CLARENCE J. JONES, Chairman
MICHAEL F. DONLAN, Co-Vice-Chairman
FRANCIS X. O'BRIEN, Co-Vice-Chairman
JAMES K. FLAHERTY, Treasurer
CONSUELO GONZALES-THORNELL, Member
KANE SIMONIAN, Secretary

BUILDING THE NEW ECONOMY

HEALTH CARE PROJECTS
FOR BOSTON
1992

AVERY®

BUILDING THE NEW ECONOMY
HEALTH CARE PROJECTS FOR BOSTON
1992

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

II. INTRODUCTION

III. BUILDING AN ECONOMIC FUTURE FOR BOSTON

- A. THE ECONOMIC CONTEXT
- B. BOSTON'S MEDICAL CARE/RESEARCH/MANUFACTURING ECONOMY
- C. BOSTON'S ECONOMIC DEVELOPMENT CHALLENGE

IV. PROJECT DESCRIPTIONS

- A. BOSTON CITY HOSPITAL
- B. BRIGHAM AND WOMEN'S HOSPITAL CLINICAL SUPPORT FACILITY
- C. MASSACHUSETTS GENERAL HOSPITAL TOWER II PROJECT
- D. SAINT MARGARET'S HOSPITAL
- E. SOUTH END TECHNOLOGY SQUARE
- F. GENZYME MANUFACTURING FACILITY PHASE ONE
- G. NEW ENGLAND DEACONESS HOSPITAL CLINICAL FACILITY
- H. SHRINERS BURNS INSTITUTE REPLACEMENT FACILITY
- I. BETH ISRAEL HOSPITAL CLINICAL CENTER
- J. NEW ENGLAND MEDICAL CENTER 1-C CLINICAL PROJECT PHASE ONE

AVERY® Aigner® LEGAL INDEX EXHIBIT DIVIDERS

I. EXECUTIVE SUMMARY

BOSTON'S HEALTH CARE ECONOMY

Boston's 31 hospitals, including Massachusetts General, Brigham and Women's, Beth Israel, New England Deaconess, Children's, and Boston City Hospital, in addition to its three major medical schools - Tufts, Boston University and Harvard, have invested more than $500 million in new facilities since 1984. During 1992 and 1993 they will invest an additional $904.5 million in new facilities to maintain their competitive advantage in the nation and the world. More than 5,000 jobs will be generated or retained. Major elements of this growth include the following:

- Boston's hospitals will invest $757 million in new **clinical facilities** over the next 2 year period, and will develop space for approximately 1,041 new patient beds, in addition to complementary outpatient space.

- Boston's 25 medical research institutions now receive more research funding from the National Institutes of Health (NIH) than any other city in the country, with 6 of the top 7 independent hospital recipients being located in Boston. To continue to meet the demand for new research needs, $72 million of investment in new **medical research facilities** will take place over the next two years, with 384 new research jobs being created.

- The Boston area is a national center of the biotechnology industry, with small start-up firms such as Diacrin and Biotransplant locating in the Charlestown Navy Yard. These new ventures will increase and lead to the construction of new **manufacturing production facilities**. A prominent example is the Genzyme Corporation's recent decision to locate a $75 million biopharmaceutical manufacturing facility in Boston at Allston Landing.

HEALTH CARE PIPELINE

The $904.5 million pipeline of projects described in this report is being built to accommodate the growth of Boston's health care economy, both at the city's premier medical institutions and in the private sector. All of them are now under construction or will start construction within the next six months, as shown in the attached development calendar. The projects include:

- *Boston City Hospital.* A $120 million new hospital will house 356 beds and acute-care services.

- *Brigham and Women's Hospital - Clinical Support Facility.* A $48.5 million building will house administrative offices and clinical facilities.

- *Massachusetts General Hospital - In-Patient Tower II.* A 286,000 square foot, $100 million health care facility will provide much needed in-patient space for overnight patients.

- *St. Margaret's Hospital.* The relocation of St. Margaret's Hospital to the St. Elizabeth's Hospital campus in Brighton will take place within this new $31 million, 85,000 square foot

building.

- *SETSA/University Associates - Research and Parking Phase I.* The South End Technology Square (SETSA) Project will develop a group of medical research, health care, and education facilities. The $72 million first phase will include a 185,000 sq. ft. research center for Boston University Medical School.

- *Genzyme Corporation Manufacturing Facility.* One of Massachusetts' leading biotechnology companies will construct its $75 million pharmaceutical manufacturing facility at Allston Landing.

- *New England Deaconess Hospital - Clinical Facility.* This $140 million clinical building will include facilities for radiology and surgery.

- *Shriners Burns Institute - Replacement Facility.* One of only three facilities in the United States specializing in the treatment of children's burns, Shriners will reconstruct and substantially increase the size of its facility in the West End at a cost of $45 million.

- *Beth Israel Hospital - Clinical Center.* Renovating and adding to the former Massachusetts College of Art building, this $138 million project will include ambulatory and preventive care facilities as well as a parking garage.

- *New England Medical Center - 1-C Clinical Project.* This $135 million project will feature two clinical in-patient and ambulatory care buildings, joined by an atrium.

BOSTON'S ECONOMIC DEVELOPMENT CHALLENGE

To continue to capture this level of economic growth, the City must take bold, critical steps to accommodate future economic activity beyond the aforementioned projects. These next steps include:

- Identification and assembly of sites for the location of new health care-related ventures, such as Allston Landing, the Charlestown Navy Yard, and South Station.
- Improvement of Boston's infrastructure, including a new Crosstown transit line to serve and connect new growth centers.
- Anticipation of professional service growth and the identification of appropriate sites outside of the core for the expansion of these industries.
- Provision of opportunities for educational advancement of Boston residents so that they will benefit from new employment opportunities associated with such growth.
- Provision of access to financial resources, including public financing mechanisms.
- Provision of appropriate regulatory policies and permitting assistance.
- Pursuit of long-term measures to guarantee Boston's prominence in the health care field, including the location of a Food and Drug Administration (FDA) facility in Boston.

TOTAL ECONOMIC IMPACT

Successfully building a stronger, more diverse economy for Boston will have a profound impact on the city and the state. Like no other city in the Commonwealth and perhaps the nation, Boston has the basis for sustained growth in the health care, research and technology-based manufacturing industries tied to its universities and hospitals.

The economic impact of the ten projects described in this volume takes several forms: creation of permanent jobs in the core economy, creation of construction jobs in the building of the projects, state income taxes paid by these workers, housing and jobs linkage funds paid by the developers of the projects, and property taxes accruing to the City from taxable developments.

The attached chart describes a number of these impacts, including:

Construction Jobs. The ten projects together will create 4,707 full-time equivalent construction jobs.

Permanent Jobs. The ten projects together will accommodate 5,513 permanent jobs in medical care, research, manufacturing and education.

Linkage Payments. Housing and jobs linkage payments, aimed at constructing affordable housing and providing job training for Boston residents in growing industries, will total $8.98 million from the ten projects.

SUMMARY

PROJECT	Total Develop. (In millions)	Constr. Jobs	Perm. Jobs	Jobs Linkage	Housing Linkage
Boston City Hospital	$120.0	594	641	$0	$0
Brigham & Women's Hospital Clinical Support Facility	$48.5	489	529	$268,000	$1,340,000
Massachusetts General Hospital Tower II Project	$100.0	514	1,100	$267,000	$1,340,000
St. Margaret's Hospital	$31.0	155	168	$0	$0
South End Technology Square	$72.0	524	384	$80,000	$400,000
Genzyme Manufacturing Facility	$75.0	300	200	$0	$0
New England Deaconess Hospital Clinical Facility	$140.0	652	605	$230,000	$1,150,000
Shriners Burns Institute Replacement Facility Project	$45.0	402	399	$100,000	$500,000
Beth Israel Hospital Clinical Center	$138.0	300	650	$280,500	$1,402,500
New England Medical Center 1-C Clinical Project - Phase I	$135.0	777	837	$271,206	$1,356,030
TOTAL	**$904.5**	**4,707**	**5,513**	**$1,496,706**	**$7,488,530**

II. INTRODUCTION

In the midst of the recession affecting New England, Massachusetts and the Boston area during the past three years, a few sectors of the economy have stood out as areas of growth. None is larger or more promising than Boston's health care economy, encompassing the city's world renowned hospitals and medical schools, the nation's largest center for health research, and a growing biotechnology, pharmaceuticals and medical instruments manufacturing industry.

Boston's health care economy plays a critical role in the economy of the entire Commonwealth. Health services now employ more than 75,000 people within the city of Boston alone, and will continue to be a significant component of job growth within the Commonwealth throughout the 1990s. Much of this growth will occur because of Boston's prominent hospitals, making the city of Boston one of the pre-eminent medical centers in the entire world.

Boston's 31 hospitals have invested more than $500 million in new facilities since 1984. During 1992 and 1993 alone they will invest $904.5 million in new facilities to maintain their competitive advantage in the nation and the world. More than 5,000 jobs will be generated or retained.

The $904.5 million pipeline of projects described in this report is being built to accommodate the growth of Boston's health care economy, both at the city's medical institutions and in the private sector. All of them are now under construction or will start construction within the next six months.

The economic impacts of these projects will include:

- The creation or retention of 5,513 permanent jobs and 4,707 construction jobs beginning this year;
- $7.48 million in housing linkage to support the construction of 500 affordable housing units;
- $1.49 million in jobs linkage to train Boston residents in careers of the future;
- 1,041 new clinical beds and 775,000 square feet of research and outpatient facilities.

The growth in this economic sector will take place in the area generally referred to as "Crosstown", encompassing :

- Charlestown Navy Yard/North Station, where the Massachusetts General Hospital has established a 650,000 sq. ft. research center, and development of 1.1 million sq. ft. of additional research space is planned. The MGH, an international leader in the health care industry, has recently broken ground for its second new inpatient care facility on its main campus;

- The Longwood Medical Area, whose institutions are proposing to create an additional 6,000 jobs in the health care industry, primarily in clinical care and biomedical research. This construction will make the Longwood Medical Area the 14th largest "downtown" in the country as measured by square footage and density - a level which qualifies it for Federal funding for a light-rail mass transit line. Nearby development in the Ruggles area will house the state's Registry of Motor Vehicles and a new Boston Police Headquarters;

- South End Technology Square/Boston City Hospital, a 16 acre biomedical research and health care center along Albany Street that will be the city's new gateway from the south, and be a premier location for growth of the new research economy; and

- New England Medical Center/Tufts University/South Station, where NEMC is proposing the development of a new clinical center in excess of 400,000 square feet. Additionally, South Station is proposed as a "technopolis" with a center for biopharmaceutical research and product development, and a Food and Drug Administration prototype testing facility, to be developed in phases by Tufts University.

Much as defense research led to technology spin-off companies, health care research is beginning to spawn applied biomedical research companies as spin-offs from Boston's leading teaching hospitals. The first of these Massachusetts companies to begin product manufacturing, the Genzyme Corporation, recently chose Allston Landing in Boston as the site for its new plant. Similarly, the growth and development of these related health care industries creates a demand for diversified professional services downtown.

Successfully building a stronger, more diverse economy for Boston will have a profound impact on the city and the state. Like no other city in the Commonwealth and perhaps the nation, Boston has the basis for sustained growth in the health care, research and technology-based manufacturing industries tied to its universities and hospitals.

To continue to capture this level of economic growth, the City must take bold, critical steps to accommodate future economic activity which will take place beyond the aforementioned projects. These next steps, to be taken in conjunction with state aid increases necessary to carry out these activities, include identifying and assisting the development of new health-care related ventures, improving the infrastructure, and providing appropriate educational opportunities to Boston residents.

To capture the economic growth of institutions and spin-off companies like Genzyme in Boston, the City must insure that critical assets available to the growth industries in the 1970s and 1980s - cheap and available land, efficient and accessible transportation facilities like the proposed Bioscience line, attainable financing, and adequate professional services - are also available to the growth industries of the next generation.

These institutions provide services to citizens of the entire region, not just Boston. Yet for the most part, Boston receives no revenue from them. Local aid is the only means by which the City can be properly compensated for the services it provides these institutions of regional importance. Of course, provision of adequate local services is critical to these institutions maintaining their competitive edge in attracting the best talent from around the world. Without those services, Boston and the institutions would be less attractive as a place to do business.

To enhance the growth of this economy and the ensuing benefits to Boston, the metropolitan region, and the Commonwealth, the City must maintain its existing level of local services. To provide adequate services, local tax revenues must be maintained, and more importantly, state aid to the City must be maintained and increased. Boston, with only 9.5 percent of the Commonwealth's population, provides nearly 17 percent of the state's jobs. It generates 21 percent of personal income by place of work, and 24 percent of all goods and services produced.

An estimated 22 percent of state revenues originate in Boston. Boston's value to the state's economy cannot be overestimated, and the Commonwealth must commit itself to the city through local aid assistance.

III. BUILDING AN ECONOMIC FUTURE FOR BOSTON

To achieve a new economy in the 1990s that provides economic prosperity and opportunity for this and the next generation, we must encourage the types of industry that have the best prospects for sustained growth in an increasingly competitive world economy.

There are strong reasons to be optimistic about the ability of such industries to thrive in Boston. Assembled in Boston and its immediate environs are colleges, universities, and medical institutions that are known throughout the world. As the global economy becomes ever more sophisticated in its demand for high technology products, Boston is uniquely situated in its ability to deliver the most important resource of all: brainpower. The talented individuals carrying on research and being educated in our institutions are the basis for an array of innovative industries such as biotechnology and pharmaceuticals, medical and scientific instruments, computer software and hardware, environmental, engineering and other specialized services. These institutions and the industries they spawn can be considered the "core" of the region's economy.

The core economy consists of those businesses and industries that bring money into the local and regional economies by exporting goods and services to other regions of the country and overseas. Strengthening the core industries of our economy has a double effect on overall economic growth, because core industries not only are major employers themselves but drive employment in other local businesses.

No part of Boston's core economy has better prospects for growth than its health care economy, encompassing the city's world-renowned hospitals and medical schools, in addition to a growing biotechnology, pharmaceuticals and medical instruments manufacturing industry. Boston's health care economy plays a critical role in the economy of the entire Commonwealth. Health services now employ more than 75,000 people within the city of Boston alone, and will continue to be a significant component of job growth within the Commonwealth throughout the 1990s.

The pipeline of projects described in this report is being built to accommodate the growth of this core economy. This growth will in turn fuel growth in other businesses, such as construction, professional services, and retail trade. Together, this growth will provide for good jobs accessible to a broad cross section of Boston residents, as a strong response to current high unemployment and the persistent problem of poverty. This economic growth also is essential to restoring the revenue bases which the City and state need to provide vital services to all residents, and especially those most in need.

A. THE ECONOMIC CONTEXT

The foundations of the last generation of growth. In the late 1970s and through most of the 1980s, Boston and Massachusetts experienced a period of strong growth in employment, income and output that became known as the "Massachusetts Miracle." The foundations for this growth, which occurred particularly in computers, defense and services, were laid decades earlier by a combination of public investment and private entrepreneurship.

In the years after World War II, three major government programs were integral in shaping the economic growth and subsequent urban development and expansion of the Boston area.

- Federal **defense research spending** subsidized research at Boston area universities, particularly at MIT.
- **Infrastructure investments** funded the construction and maintenance of area highways which have made suburban cities and towns outside the city of Boston accessible to and from downtown, particularly Routes 128 and 2, and the Massachusetts Turnpike.
- FHA **subsidized home mortgages** combined with this highway development made westward expansion to the suburbs both cheaper and more accessible.

These government policies resulted in a number of influential and powerful trends. A quarter of a million people moved from Boston to the suburbs. Attracted by cheap land and easy access to customers and distributors, high-tech companies started by entrepreneurs as spin-offs from MIT's research labs (e.g. Digital, Wang, Raytheon), located along the Route 128 corridor and beyond, and fueled the expansion of the Massachusetts economy. These companies in turn led to further spin-off companies as former employees started their own companies. At the same time, these companies created a demand for diversified professional services, such as legal and financial services, which in turn ignited a building boom in downtown Boston.

With the suburban exodus, the central core of Boston lost jobs and population and the traditional manufacturing areas of the city went into decline. While the availability of credit and venture capital money from Boston's financial companies provided high-tech entrepreneurs with funds necessary to start up and expand, investment in the traditional industrial areas of Boston, such as Ruggles, South Bay and Newmarket, declined. This disinvestment affected both the residential and commercial stability of the area.

Between 1976 and 1990, city employment continued to shift from traditional labor intensive manufacturing jobs to technology and service jobs. Over the past five years, the city's service industries, including transportation, communication, public utilities, finance, insurance, business services and professional services, expanded their share of the city's total employment from 60% in 1986 to 62% in 1990, while the shares of total employment in manufacturing and trade declined from 6% to 5% and from 15% to 13%, respectively.

The Boston Economy Today. After exceeding many measures of economic growth nationwide during the 1982 through 1988 period, Boston experienced an economic downturn coinciding with the regional decline in 1989 and 1990. During 1991, the economies of the New England states, Massachusetts, greater Boston, and the city of Boston itself all showed continued weakness in job growth, employment, income, housing, and commercial real estate markets.

The growth of the economy of the city and surrounding suburbs primarily rested on high technology, defense, finance, and professional and business services. Today, growth in those industries that fueled the boom has eroded. The success of microcomputers has severely damaged the Massachusetts minicomputer industry, reductions in defense spending have hurt weapons manufacturers, and defense research dollars, the original engine of the growth system, may also be cut.

The addition of 181,000 jobs in metropolitan Boston during the three years from 1985 through 1988 has been more than offset by the loss of an estimated 230,000 jobs in the subsequent three year period, 1988-91. The city of Boston has experienced a similar reversal. Total employment in the city decreased by 8,654 between 1986 and 1990, as the growth of 20,819 jobs from 1986 through 1988 was offset by the loss of 29,473 jobs from 1988 through 1990. The two-year loss of jobs is most evident in construction, wholesale trade, finance, insurance, real estate and professional services.

Tomorrow's Opportunities. However, some sectors of Boston's economy have continued to experience employment gains in the face of recession: most notably, the city's health care and educational institutions. Boston's teaching hospitals are receiving an increasing share and amount of health care research dollars. The amount of annual Federal medical research dollars (about $500 million in Boston and Cambridge) now rivals annual defense research dollars that fueled the prior boom.

Much as defense research led to technology spin-off companies, health care research is beginning to spawn applied biomedical research companies as spin-offs from Boston's leading teaching hospitals, particularly in the Longwood Medical Area, at Massachusetts General Hospital, Tufts-NEMC, and University Hospital/BCH. The first of these Massachusetts companies to begin product manufacturing, Genzyme Corporation, recently chose Allston Landing in Boston as the site for its new plant. Similarly, the growth and development of these related health care industries creates a demand for diversified professional services downtown.

B. BOSTON'S MEDICAL CARE/RESEARCH/MANUFACTURING ECONOMY

Boston's unparalleled medical research and health care complex, and the private biotechnology, pharmaceuticals, and medical instruments firms that emerge from this base, are the core industries in Boston currently experiencing the strongest new growth.

The city of Boston is a world center for dynamic health-related industry. Its 31 hospitals, dozens of universities, medical research institutions and medical-related companies are collectively the nation's premier center for health care and largest recipient of federal medical research grants. Out of this intense environment come innovative new drugs, treatments and equipment developed in the research labs, tested and refined in the hospitals, and produced by spin-off biotechnology and medical instruments companies.

By establishing links to pathbreaking research at world-renowned hospitals and universities, private biotechnology companies can cut their product development times dramatically and gain access to a highly skilled labor force of doctors, scientists, and technicians. It is these advantages -- as well as access to professional and financial services attuned to the specialized needs of biotechnology and other health-related fields -- that make Boston a magnet for biotech companies.

Medical Care Institutions. Massachusetts' economic future will be dominated by the existence and strength of the intellectual infrastructure of the complex of medical and educational institutions straddling the Charles River. This area is home to 31 hospitals, including

Massachusetts General, New England Deaconess, Brigham and Women's, Beth Israel, Children's, University Hospital, St. Elizabeth's, the New England Medical Center, and Boston City Hospital, as well as three medical schools — Tufts, Boston University, and Harvard. Health services employ more than 75,000 employees within the city of Boston alone.

These hospitals and clinics are large not only in size and number, but in stature. Working closely with in-house researchers and Boston area biotech and medical products companies, Boston's health care facilities apply the newest and most effective techniques, instruments and medicines. This is part of what attracts patients from all over the world to Boston hospitals. For example, over 20 percent of the patients at Children's Hospital and the Dana-Farber Cancer Institute are from other states and abroad.

Boston's major hospitals are also a resource for the entire region, drawing many of their patients from cities and towns surrounding Boston. In this way, the Boston hospitals "export" their services to the region and beyond.

In order to continue its role as a health care magnet for the region, nation and world, Boston's hospital and medical school community has invested $750 million in new facilities since 1984, and has committed an additional $750 million to upgrading clinical facilities during 1991 and 1992.

Many of the projects described in this volume are designed to expand or modernize clinical facilities in order to maintain the preeminence of Boston hospitals, ensuring that they continue to draw patients from around the region, nation and world. New clinical facilities will also allow hospitals to play an important role as cutting-edge testing facilities for the new drugs, instruments and techniques developed in Boston's medical research community.

Medical Research at Institutions. Medical research carried out by hospitals, universities, medical schools and other non-profit institutions is a large and expanding sector of the Boston economy. In FY90 the National Institutes of Health contributed over $400 million in research grants to the 25 medical research institutions within the city limits; combined with private grants this puts the total research budget of Boston institutions well over the half billion dollar mark.

Boston is now the nation's largest center for medical research. Twenty years ago, Boston trailed New York and San Francisco in receipt of these grants; from 1970 to 1989, Boston's grants grew by 90 percent in constant dollars, while New York's grew at under 15 percent and San Francisco's by only 11 percent.

Six of the top 7 independent hospitals in the nation which received the most National Institutes of Health research funding in 1990 are located in Boston. Boston's Longwood Medical Area alone attracted $240 million in federal research grants, more than all but three other entire states receive.

Total Federal support for health research and development nationwide is just under $10 billion, and private support is even higher. For example, the Howard Hughes Medical Institute alone supports research endeavors employing over 200 people at eight Boston-area institutions.

An increasing source of funding for medical research is from corporate-sponsored research agreements. These include a $100 million, ten year agreement between the Dana-Farber Cancer Institute and Sandoz Pharmaceutical Ltd. There are four agreements between Massachusetts General Hospital and various chemical, drug and cosmetic companies. These agreements are bringing in $33 million a year.

The medical research institutions are expanding their facilities, providing construction and permanent jobs to area residents. Today, they have 2.9 million square feet of research space. The institutions have begun work on or submitted proposals for an additional 2 million square feet over the decade of the 1990s, most of it within the next 3 1/2 years. Several of the projects described in this volume will contain research facilities.

Boston's medical research economy currently provides employment to an estimated 8,500 or more full time equivalent researchers. Depending on how the new space to be developed is staffed, between 2,500 and 5,000 additional researchers are expected to be at work in these institutions over the decade.

Biotechnology Research and Manufacturing. Boston's web of interconnected hospitals and educational institutions, manufacturing and service companies, entrepreneurs and scientists-- in close geographic proximity-- proves to be an extraordinarily rich environment for the growth of biotechnology companies.

About 14,000 people are employed in the Massachusetts biotechnology industry, which is concentrated in the Boston metropolitan area. The Boston area has well over 100 biotechnology firms, making it the nation's third largest center for the industry by number of firms, and second largest by total revenue. Massachusetts biotech companies spend an estimated $1.3 billion annually within the state, $432 million of it on payroll. Earnings are $32,000 per job on average.

Unlike firms in some other areas, these companies are geographically concentrated, with most to be found near the research centers of the major Boston hospitals and MIT in Cambridge. Many of the founders and scientists at these firms graduated from or still work at these institutions, and there is constant interaction between the companies and the institutions. It is this concentration of private and non-profit research, of laboratories inventing products and clinical sites testing them, connected by public transit within the space of a few square miles, that gives Boston's biotech community its competitive advantage.

An example of this interaction is the decision of two biotech start-up firms, Diacrin Inc. and Biotransplant Inc., to move into space adjacent to Massachusetts General Hospital's 650,000 square foot research center in the Charlestown Navy Yard. Both firms are conducting research in conjunction with MGH, and will be able to stay in constant contact with MGH's labs and its hospital facilities where clinical testing might be carried out.

Several Boston-area biotech companies are expected to begin manufacturing products for commercial use within the next few years, marking a change in the nature of the industry. The number of biotech manufacturing production jobs in the state is estimated to reach 6,300 by 1993 and 25,000 by the year 2000. Recognizing the advantages of a Boston location, the first of

these companies to make a siting decision for a major manufacturing facility, Genzyme Corporation, has chosen to locate at Allston Landing in Boston.

C. BOSTON'S ECONOMIC DEVELOPMENT CHALLENGE

To capture the economic growth of institutions and spin-off companies like Genzyme in Boston, the City must insure that many critical assets made available by the federal government to the growth industries in the 1970s and 1980s -- cheap and available land, efficient and accessible transportation facilities, attainable financing, adequate professional services -- are also available to the growth industries of the next generation.

To continue to provide these resources, the City must maintain its revenue base, but concurrently receive the state aid commensurate with the City's overall contribution to the Massachusetts economy. An estimated 22 percent of all state government revenues originate in Boston, and 17 percent of all of the state's jobs are located here. Approximately 21 percent of the state's personal income is generated in the city, and 24 percent of all goods and services is produced in Boston. The State must recognize the magnitude of Boston's contribution and provide an equitable share of local assistance.

It is important to the long-term economic and environmental health of the region that the growth of the institutions and spin-off companies be accommodated in areas where adequate transportation access can be provided. The economic growth in and around Boston over the past thirty years has taxed the capacity of the 1950s highway and airport infrastructure and led to environmental degradation. Route 128, which once provided easy access to jobs and homes, now suffers from severe congestion. The opportunity exists, however, to channel this growth to the older industrial areas of Boston that were bypassed by the last manufacturing boom.

This next generation of economic development must be planned in concert with the transportation infrastructure that will support its growth. Only in this way can growth occur in conjunction with improved environmental quality and an enhanced quality of life in the city's economic centers and their surrounding neighborhoods.

The City's next steps toward creating the conditions for growth today include:

1. Identify and assemble appropriate sites in "Crosstown" for the location of entrepreneurial health care ventures. Crosstown, Boston's historic manufacturing belt, is the home to most of the city's established basic research centers - the Longwood Medical Area, BU Medical Center/Boston City Hospital, Tufts/NEMC and MGH. Appropriate sites for spin-off companies in this area could include Allston Landing, Boston State Hospital, Ruggles Center, South Bay/Newmarket, Fort Point Channel, and the Charlestown Navy Yard.

- At **Allston Landing**, the Genzyme Corporation will be the anchor for a new biotechnology park strategically located between the major Boston and Cambridge research centers. An existing building on the site will be renovated into research, office and manufacturing space for biomedical firms, and can be ready for occupancy within several months. Nearly thirty additional acres of land will become available with the relocation of Conrail facilities and the provision of improved Turnpike access ramps.

- In the **Charlestown Navy Yard**, three locations with zoning and environmental approvals in place are available adjacent to the MGH research center. They range from a fit-out of an existing historic structure to the Yard's End parcel approved for over 1 million square feet.

- The **South End Technology Square (SETSA)** Project, adjacent to Boston City Hospital and the Boston University Medical Center, includes the development of institutional research, medical office, and health care facilities. The first phase, to be occupied by Boston University, has begun construction. Later phases will include space for private biotechnology and pharmaceutical firms.

- The **South Station Technopolis** is scheduled for completion later in the decade. This biomedical research/office/parking complex is located close to the New England Medical Center and Tufts University, and boasts unsurpassed transportation access to the city, suburbs, and airport.

Other economic development areas in Boston contain underutilized parcels, often owned by government agencies, that can provide cost-effective manufacturing locations with ready access to transportation, labor, and area institutions. These include the Newmarket/South Bay area near the Southeast Expressway, Boston State Hospital, and the Fort Point Channel/South Boston area, with future highway and airport access through the third harbor tunnel.

2. Establish Enterprise Zones in the Crosstown area to write down the cost of land so that it is competitive with suburban locations. Businesses locating in prospective Enterprise Zones, among other things, would qualify for Federal and state job creation tax incentives which help to write-down the cost of land. Bank credits for homeownership and business development, to insure the stability of the surrounding neighborhood, are available as well.

3. Rebuild and reinforce Boston's infrastructure to provide access to Crosstown's underutilized industrial land and improve the quality of life in the Boston area as a whole. Important infrastructure projects include: the Central Artery/Third Harbor Tunnel, Crosstown Bioscience Line, Logan Airport Modernization, and High-Speed Rail to New York City. While proposed commuter rail extensions would prompt only 12% of the commuter population to leave their cars behind, the Longwood Medical Area alone has reached a size and density large enough to justify a new light rail system capturing a substantially larger proportion of commuters. In addition, construction of these projects will ensure superior transportation access between the Enterprise Zones, Logan Airport, and regional and local transportation systems. With these improvements, Boston's Enterprise Zones can surpass the suburbs in transportation efficiency.

4. Anticipate the growth of professional services and identify appropriate sites outside the congested core for the expansion of these service industries. These areas include Midtown, South Station, North Station, and the Fort Point Waterfront, which are close to public transportation and can accommodate additional long-term growth in the office, services, and hospitality economies.

5. Ensure that growth provides employment for Boston residents. Jobs created in these industries must be accessible to Boston residents. Many of the jobs in these industries require no

more than a high school diploma or an associate's degree. Companies and institutions are seeking qualified candidates for these positions; by expanding vocational education and community college programs targeted towards the needs of such industries as medical care, medical research, and biotechnology the City can place many residents in good-paying jobs. A recent EDIC survey of Boston's medical institutions found that nearly half of their employees– 43 percent– were Boston residents.

6. Provide effective vocational education in biotechnology research and manufacturing. Boston's existing base of doctors and scientists offers a competitive advantage to biotechnology and other medical firms involved in research and development. However, the public and private sectors have recognized a need for additional technicians and process managers and workers. They have begun to cooperate to achieve this competitive advantage by setting up programs to train not only biomedical research technicians but also production workers.

Boston's hospitals and research centers are world-renowned primarily because of the skilled people who have graduated from the area's high quality educational institutions. These same institutions are now turning out individuals to serve the needs of biotechnology and other health-related companies, in various partnerships with private firms, public schools, hospitals, and the City of Boston. Numerous programs have been set up to serve high school students and graduates, low-income adults, and degree-holders.

One example is Project Protech, a federally-funded demonstration model that combines work at Boston hospitals with two years of high school and two years of community college education in health subjects. Building on the experience of this and other programs, the City is exploring ways to expand these initiatives even further, possibly tapping the great potential of the underutilized Humphrey Occupational Resource Center in Roxbury.

The City's Jobs Linkage program, in which developers of structures over 100,000 square feet contribute to a fund used for job training, can provide resources for expanded or new training programs targeted to the needs of biotechnology and the health care field.

7. Provide access to financial resources. Companies building or renovating facilities in Boston can be offered a readily available source of capital at or near prime lending rates through the public bonding capacity of the Boston Industrial Development Financing Authority. BIDFA has issued bonds for over 100 projects in the city of Boston, including a $37 million tax-free issuance to Patriot Paper Company, a recycled paper manufacturer in Hyde Park.

Where appropriate, the City of Boston may also pursue state and federal infrastructure grants to build roads and other improvements on a site. For Genzyme, the City is applying for state Public Works Economic Development grants and federal Economic Development Administration grants.

Operating costs in a Boston location can be reduced by Boston Edison's economic development discount program, which reduces the base cost of a manufacturing facility's electrical use by forty percent in its first full year of operation, and by 30, 20, and 10 percent in the second through fourth years, respectively.

8. Provide appropriate regulatory policies and assistance in permitting. The BRA, as the City of Boston's planning agency, has instituted a policy which not only anticipates the emergence of the biotechnology and related medical research industries, but also actively encourages and assists their establishment and growth.

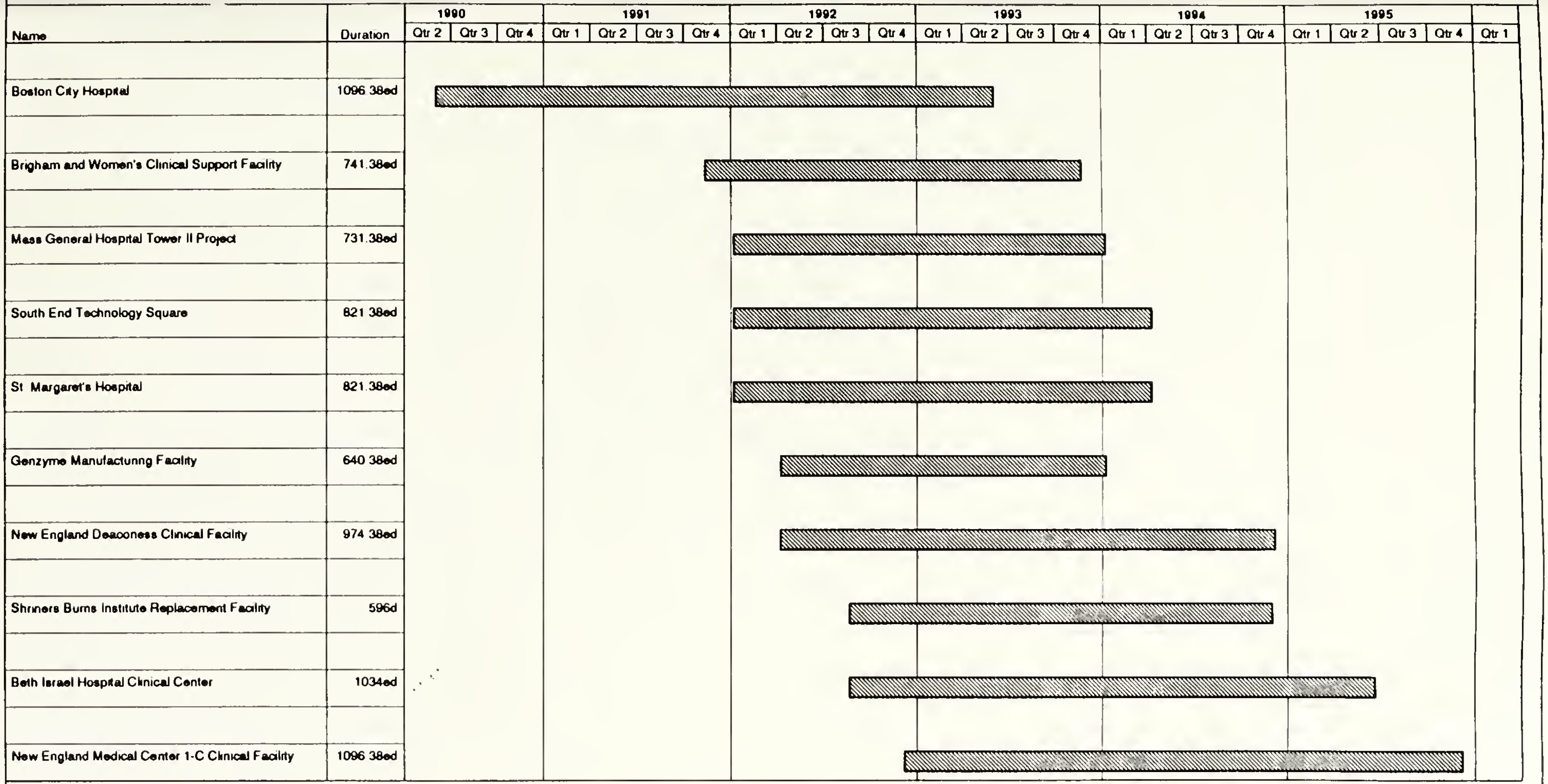
By pursuing "as-of-right" zoning and obtaining City and state environmental approvals in advance for areas like Allston Landing and the Charlestown Navy Yard, the BRA makes it possible for businesses to locate at these sites without obtaining individual approvals. The BRA committed to a "fast-track" approval process for the Genzyme Corporation that has allowed the firm to break ground without an extensive permitting process. Both the City and state have appointed ombudsmen to guide the Genzyme project through the regulatory process.

9. Pursue long-term measures to guarantee Boston's preeminence in the health field. The City is planning and promoting several long-term objectives that will add to Boston's competitive advantage in biomedical research, health care, and medical products manufacturing. They include:

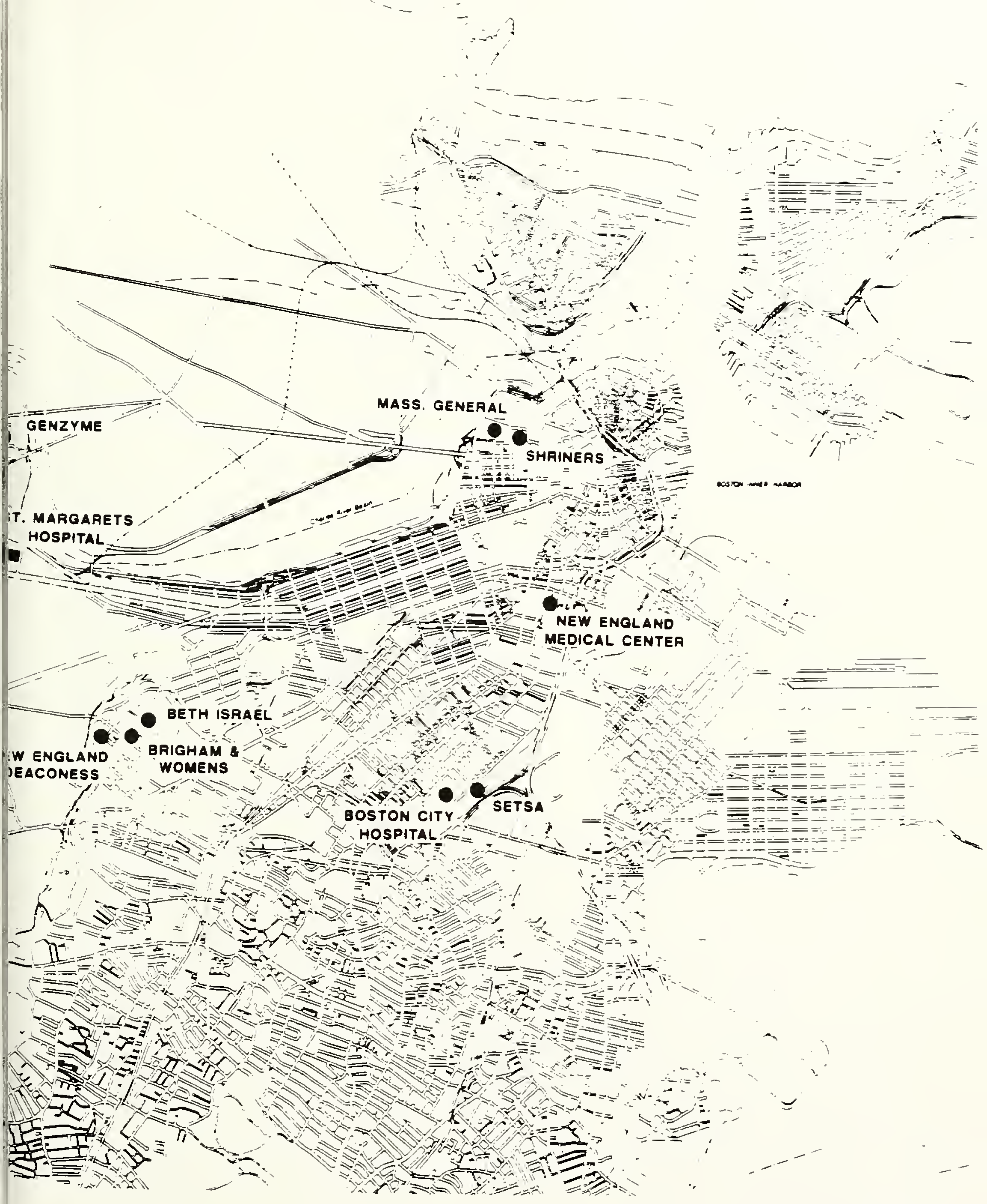
- **Locate an FDA Testing Facility in Boston.** The FDA presently does not have a testing facility with a specialized capability in evaluating biotechnology products. Tufts University has proposed its South Station Technopolis Project as a potential location for such an FDA facility in Boston. This would further enhance the competitive advantage of a Boston location for biomedical research and manufacturing.

- **Promote the location of "catalyst facilities" in Boston.** Part of the competitive advantage of Boston for biotechnology development and manufacturing will be based on the proximity of related support services and businesses. One possible catalyst would be a Generic Biotech Processing Center, a high cost facility shared by smaller biotech companies for the production of experimental quantities of biotechnology products.

Development Calendar



Name	Duration
Boston City Hospital	1096 38ed
Brigham and Women's Clinical Support Facility	741.38ed
Mass General Hospital Tower II Project	731.38ed
South End Technology Square	821 38ed
St Margaret's Hospital	821.38ed
Genzyme Manufacturing Facility	640 38ed
New England Deaconess Clinical Facility	974 38ed
Shriners Burns Institute Replacement Facility	596d
Beth Israel Hospital Clinical Center	1034ed
New England Medical Center 1-C Clinical Facility	1096 38ed



BOSTON'S HEALTH CARE PROJECTS 1992

BOSTON CITY HOSPITAL

PROGRAM DESCRIPTION

The new addition to Boston City Hospital is an eight-level, 325,000 square foot building housing 356 beds and acute-care services. It is located immediately adjacent to the Ambulatory Care Center and connected to it on six levels, basement through the fifth floor.

The lowest level is built entirely underground and houses service and supply departments, a new kitchen, and new central sterile processing area. Staff and service connection are maintained to all other renovated buildings, and the warehouse, power plant and laundry.

The ground floor houses a new Emergency Department, an adjoining satellite radiology suite to directly support emergency, and a new main entrance containing a lobby, waiting rooms, admitting and an information area. The Emergency Department has separate facilities for children and adults and separates ambulance traffic from ambulatory. The Radiology Satellite has four R/F rooms and one CT Scan room. A new boulevard off Harrison Avenue brings patients and visitors to the new front entrance. A new ambulance and emergency entrance as well as a receiving dock are located on the opposite side, with access off of Albany Street.

The second floor contains a surgical suite with eight new procedure rooms and a twelve-bed recovery room. The Surgical Suite is designed to separate clean staff and supplies from contaminated by use of a central core and procedure rooms surrounded by a perimeter corridor.

DEVELOPMENT TEAM

Project Address:	Harrison Avenue
Developer:	Boston City Hospital
Architect:	Hoskins Scott Taylor & Partners Inc./CANNON (a Joint Venture)

DEVELOPMENT PROGRAM

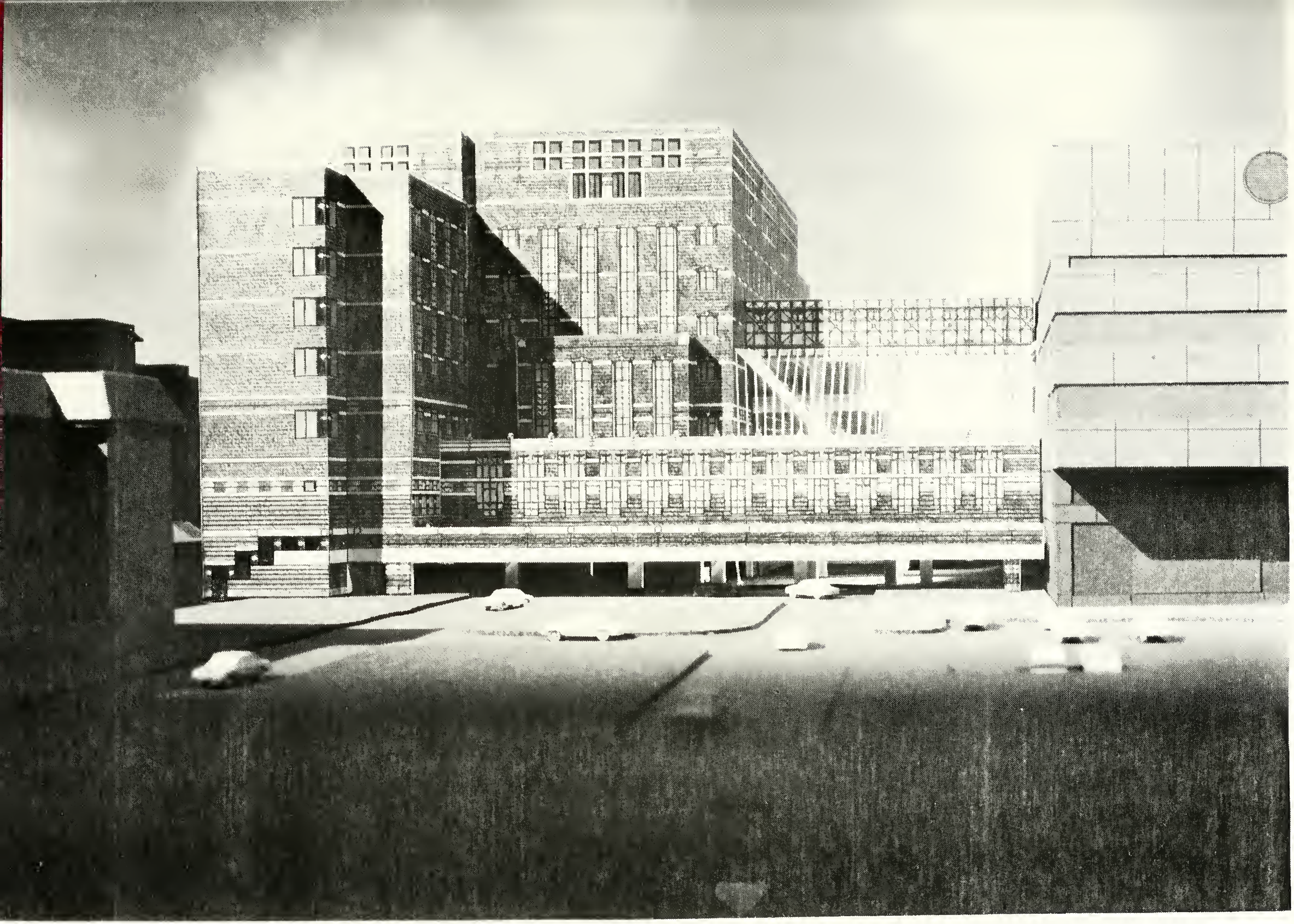
Gross Square Feet:	325,000
Total Development Cost:	$120 million

PUBLIC BENEFITS

Construction Jobs:	594
Permanent Jobs:	641
Housing Linkage:	$0
Jobs Linkage:	$0

CONSTRUCTION SCHEDULE

Construction Start:	1990 - II
Construction Completion:	1993 - II



BRIGHAM AND WOMEN'S HOSPITAL
CLINICAL SUPPORT FACILITY

PROGRAM DESCRIPTION

The Clinical Support Facility of the Brigham and Women's Hospital will be developed along Shattuck Street on the hospital's existing campus and will be comprised of a 9 story, 234,000 square foot building.

In addition, a 4,000 square foot tower lobby will be constructed to enhance the pedestrian access between this new building and the main facility. The project will also include the reconstruction of Shattuck Street as a pedestrian-oriented plaza abutting Brigham and Women's Hospital, Children's Hospital, Harvard Medical School.

DEVELOPMENT TEAM

Project Address:	Shattuck Street
Developer:	Brigham and Women's Hospital
Architect:	Tsoi, Kobus and Associates

DEVELOPMENT PROGRAM

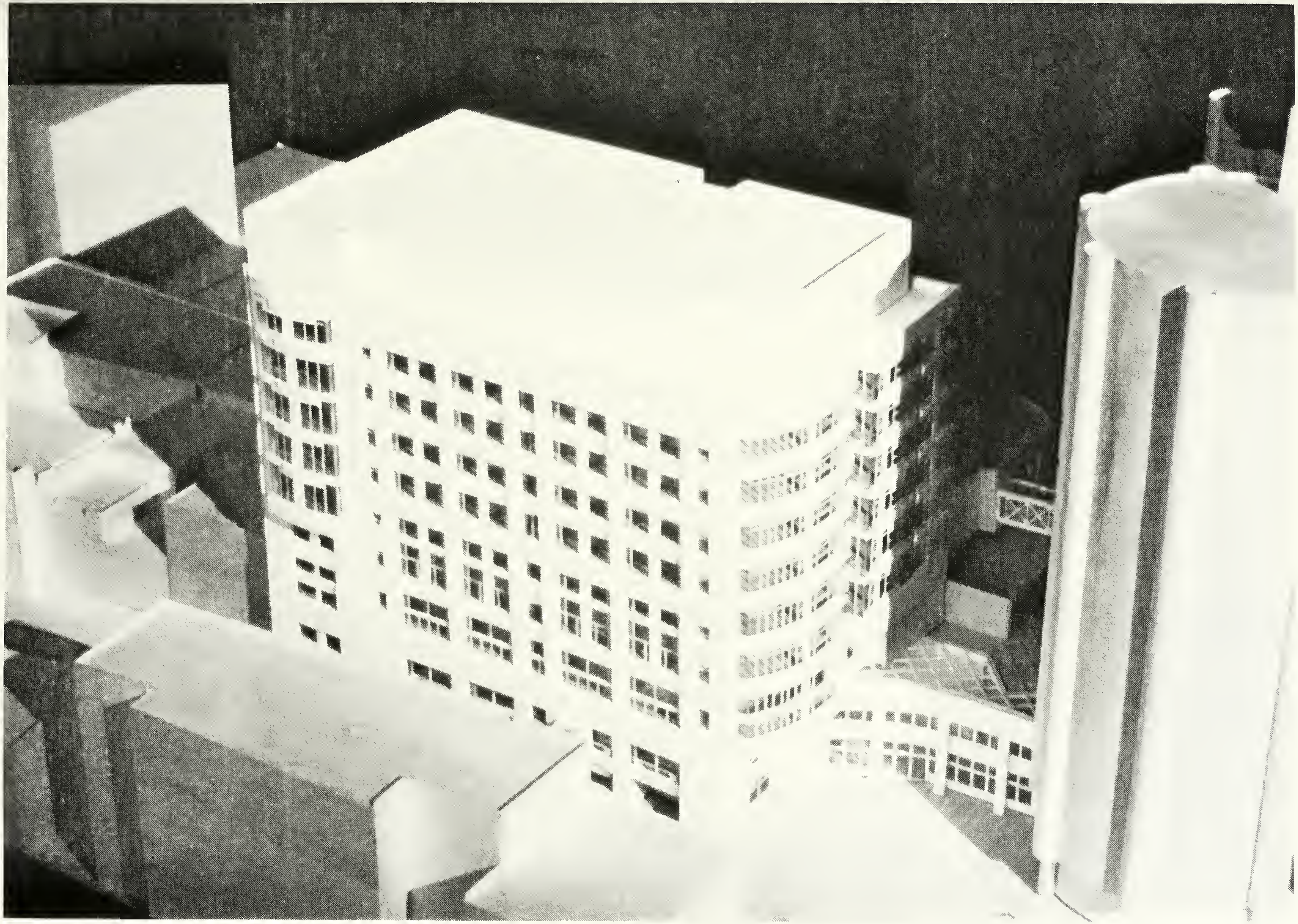
Gross Square Feet:	268,000
Clinical Square Feet:	234,000
Total Development Cost:	$48.5 million

PUBLIC BENEFITS

Construction Jobs:	489
Permanent Jobs:	529
Housing Linkage:	$1,340,000
Jobs Linkage:	$268,000

CONSTRUCTION SCHEDULE

Construction Start:	1991 - IV
Construction Completion:	1993 - IV



MASSACHUSETTS GENERAL HOSPITAL
TOWER II PROJECT

PROJECT DESCRIPTION

The proposed MGH Tower II Project involves the construction of approximately 316,000 gross square feet of inpatient space. The Project is intended as a replacement facility for outmoded patient care space and will occupy the site of the existing Baker Building. Tower II will be 15 stories on a site immediately adjacent to the recently completed Tower I project. Construction on the Tower II Project was initiated in January, 1992, with completion planned in January, 1994.

The Tower II Project will generate approximately 514 construction jobs and, when completed, will house 1,100 permanent workers. This $100 million project will generate approximately $1.3 million in housing linkage funds and $267,000 in jobs linkage funds.

DEVELOPMENT TEAM

Project Address:	Blossom and Charles Streets
Developer:	Massachusetts General Hospital
Architect:	Hoskins, Scott Taylor

DEVELOPMENT PROGRAM

Gross Square Feet:	316,000
Clinical Square Feet:	316,000
Total Development Cost:	$100 million

PUBLIC BENEFITS

Construction Jobs:	514
Permanent Jobs:	1,100
Housing Linkage:	$1,340,000
Jobs Linkage:	$267,000

CONSTRUCTION SCHEDULE

Construction Start:	1992-I
Construction Completion:	1994-I

SAINT MARGARET'S HOSPITAL

PROGRAM DESCRIPTION

The relocation of St. Margaret's Hospital of Dorchester to the St. Elizabeth's Hospital campus in Brighton will include the construction of a five story, 85,000 square foot in-patient facility. In addition, a 140,000 square foot structured parking facility with 400 spaces will be constructed.

The Project will generate 155 construction jobs, in addition to 168 permanent jobs, with a total investment of $31 million. The initiation of the new facility, which will provide for the continued operation of St. Margaret's Hospital, was initiated in early 1992 and will be completed in 1994.

DEVELOPMENT TEAM

Project Address:	Cambridge Street
Developer:	St. Elizabeth's Hospital
Architect:	Dean Tucker Shaw, Inc.

DEVELOPMENT PROGRAM

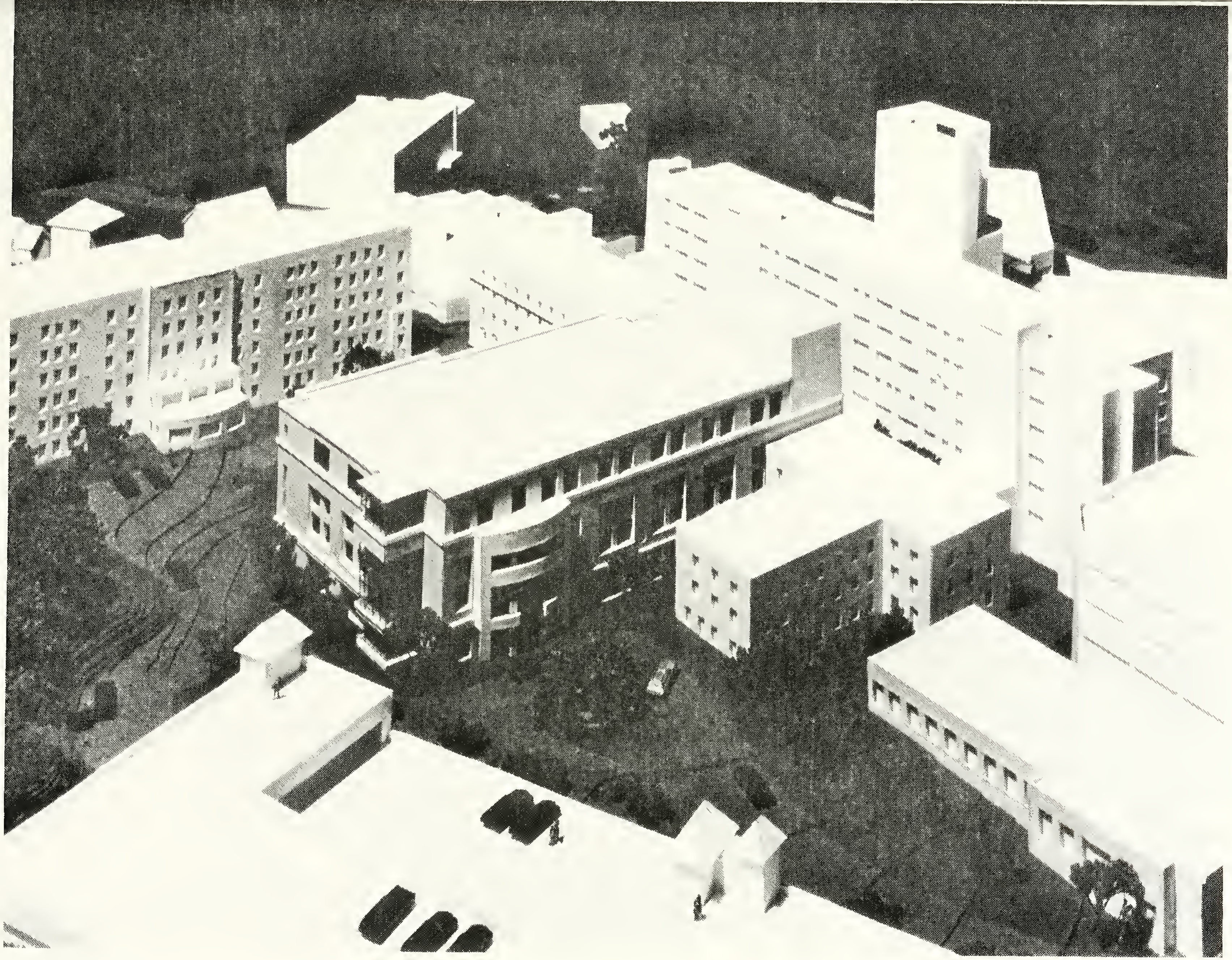
Gross Square Feet:	85,000
Clinical Square Feet:	85,000
Parking Spaces:	400
Total Development Cost:	$31 million

PUBLIC BENEFITS

Construction Jobs:	155
Permanent Jobs:	168

CONSTRUCTION SCHEDULE

Construction Start:	1992 - I
Construction Completion:	1994 - II



SOUTH END TECHNOLOGY SQUARE

PROJECT DESCRIPTION

The South End Technology Square Project represents a total development of 810,000 square feet of biomedical research space, in addition to a 1,000 car parking garage and 250 room hotel. Located adjacent to the Boston University Medical Center, the project will provide important research space for University Hospital and the Boston University Medical School.

Phase I of the project includes the construction of a 180,000 square foot biomedical research building to be owned and utilized by the Boston University Medical School. Phase I also includes the construction of the 1,000 car garage.

The Project will generate approximately 524 construction jobs, in addition to 384 permanent jobs. Construction of the medical research building was initiated in early 1992, and will be completed in mid 1994.

DEVELOPMENT TEAM

Project Address:	624-710 Albany Street
Developer:	University Associates
Architect:	Cannon Associates

DEVELOPMENT PROGRAM

Gross Square Feet:	530,000
Research Square Feet:	180,000
Total Development Cost:	$72 million

PUBLIC BENEFITS

Construction Jobs:	524
Permanent Jobs:	384
Housing Linkage:	$400,000
Jobs Linkage:	$80,000

CONSTRUCTION SCHEDULE

Construction Start:	1992-I
Construction Completion:	1994-II

GENZYME MANUFACTURING FACILITY
PHASE I

PROGRAM DESCRIPTION

The Genzyme Corporation, one of the State's leading biotechnology firms, is constructing a $75 million biopharmaceutical manufacturing plant comprised of 159,000 square feet on a 8.6 acre site along the Charles River at Allston Landing. This is the first major biotechnology manufacturing plant in Massachusetts, and will hopefully be the first of many such projects in Boston.

Subsequent phases of the Genzyme development on this site will include additional manufacturing, research and development, and a corporate headquarters facility.

The Project will generate approximately 300 construction jobs and 200 permanent jobs.

DEVELOPMENT TEAM

Project Address:	One Solider's Field Road
Developer:	Genzyme Corporation
Architect:	Architectural Resources Cambridge, Inc.

DEVELOPMENT PROGRAM

Total Square Feet:	159,500
Manufacturing Square Feet:	159,500
Total Development Cost:	$75 million

PUBLIC BENEFITS

Construction Jobs:	300
Permanent Jobs:	200

CONSTRUCTION SCHEDULE

Construction Start:	1992-II
Construction Completion:	1994-I

GENZYME

NEW ENGLAND DEACONESS HOSPITAL
CLINICAL FACILITY

DEVELOPMENT DESCRIPTION

The New England Deaconess Clinical Facility includes the construction of a new 330,000 square foot clinical facility on the hospital's main campus and will include the replacement of the hospital's main in-patient building. A total investment of $140 million will result, with the generation of 652 construction jobs and 605 permanent jobs.

DEVELOPMENT TEAM

Project Address:	Pilgrim Road
Developer:	New England Deaconess Hospital
Architect:	Shepley Bulfinch Richardson & Abbott

DEVELOPMENT PROGRAM

Gross Square Feet:	330,000
Clinical Square Feet	330,000
Total Development Cost	$140 million

PUBLIC BENEFITS

Construction Jobs:	652
Permanent Jobs:	605
Housing Linkage:	$1,150,000
Jobs Linkage:	$230,000

CONSTRUCTION SCHEDULE

Construction Start:	1992 - II
Construction Completion:	1994 - IV

SHRINERS BURNS INSTITUTE REPLACEMENT FACILITY PROJECT

PROJECT DESCRIPTION

Shriners Hospital proposes to construct a replacement facility on the site of its existing facility. Specifically, Shriners proposes to (1) demolish 80,000 square feet of existing space, (2) construct a 200,000 square feet replacement facility (nine stories, 137 feet in height), and (3) construct an underground parking garage. The total gross square footage of the Proposed Project is approximately 245,000 square feet.

The Proposed Project will result in additional medical research space, increased patient bed space (although the number of beds will remain at 30), new outpatient care space, and on-site parking. The two-phase project calls for the existing facility to remain in operation until new hospital space is constructed above the existing building. Following the completion of the new hospital space, the existing facility will be replaced. Construction of the project is scheduled to begin in April 1992, with completion scheduled for the Fall of 1994.

DEVELOPMENT TEAM

Project Address:	51 Blossom Street
Developer:	Shriners Hospital for Crippled Children
Architect:	Odel Associates, Inc.

DEVELOPMENT PROGRAM

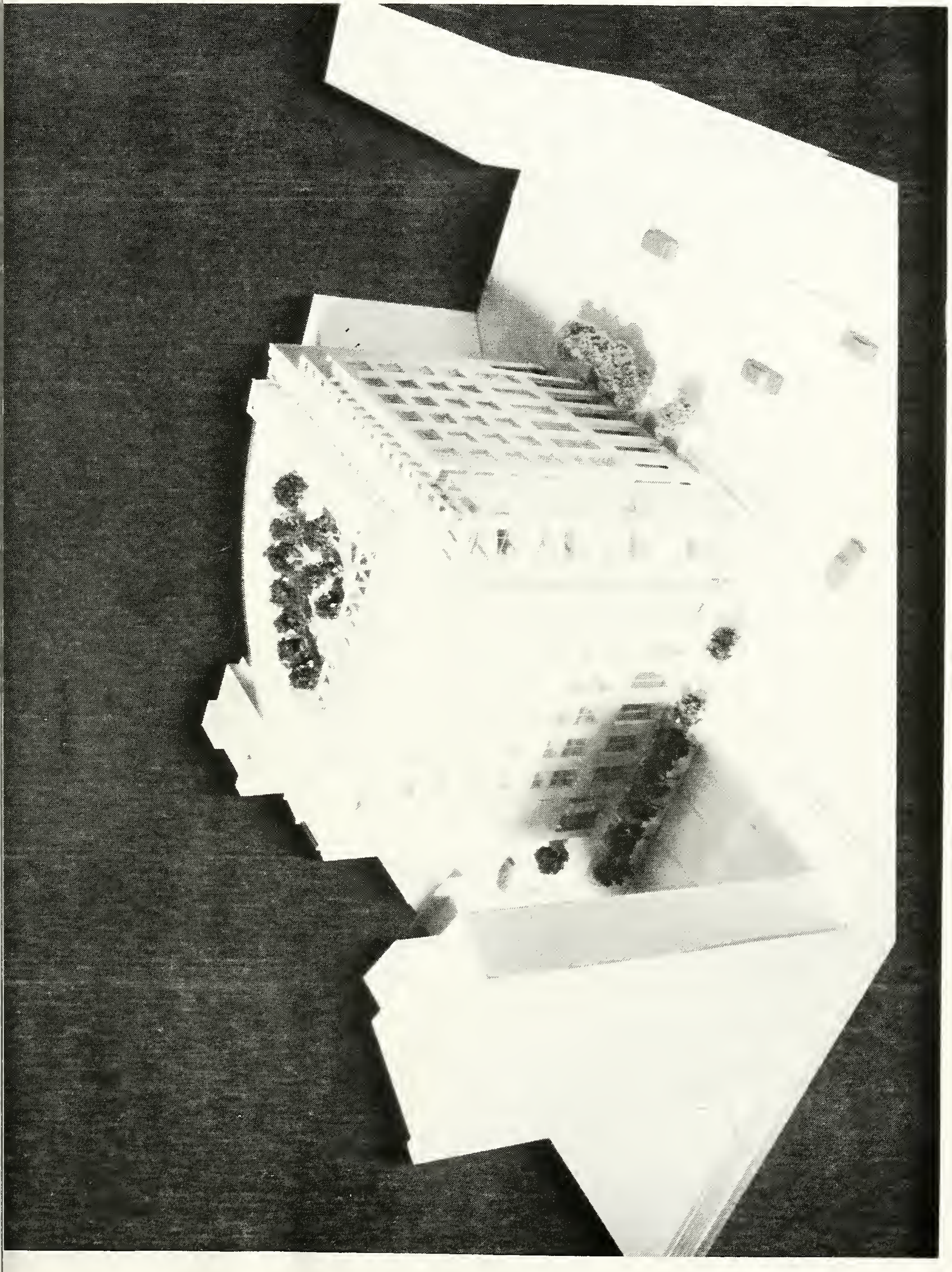
Gross Square Feet:	200,000 gsf
R&D Square Feet:	30,000 gsf
Total Development Cost:	$45 million

PUBLIC BENEFITS

Construction Jobs:	402
Permanent Jobs:	399
Housing Linkage:	$500,000
Jobs Linkage:	$100,000

CONSTRUCTION SCHEDULE

Construction Start:	1992-III
Construction Completion:	1994-IV



BETH ISRAEL HOSPITAL
CLINICAL CENTER

PROGRAM DESCRIPTION

The Beth Israel Clinical Center will retain the former Massachusetts College of Art "collegiate-gothic" structure and provide for the development of a 380,500 square foot clinical center, in addition to a proposed underground parking garage. At a total development cost of $138 million, the facility will provide a center for extensive ambulatory care services, related preventive care, and educational services.

The Clinical Center will allow Beth Israel Hospital to consolidate and improve its delivery of ambulatory care and to provide related preventive health care services in collaboration with area hospitals, including a Center for Medical Technology, a Medical Learning Center, and a Joint Center for Radiation Therapy.

The Clinical Center will contribute $3 million to a Community Trust Fund to benefit the Mission Hill and Fenway Neighborhoods.

DEVELOPMENT TEAM

Project Address:	364 Brookline Avenue
Developer:	Beth Israel Hospital
Architect:	Rothman, Rothman Heinman Architects, Inc.

DEVELOPMENT PROGRAM

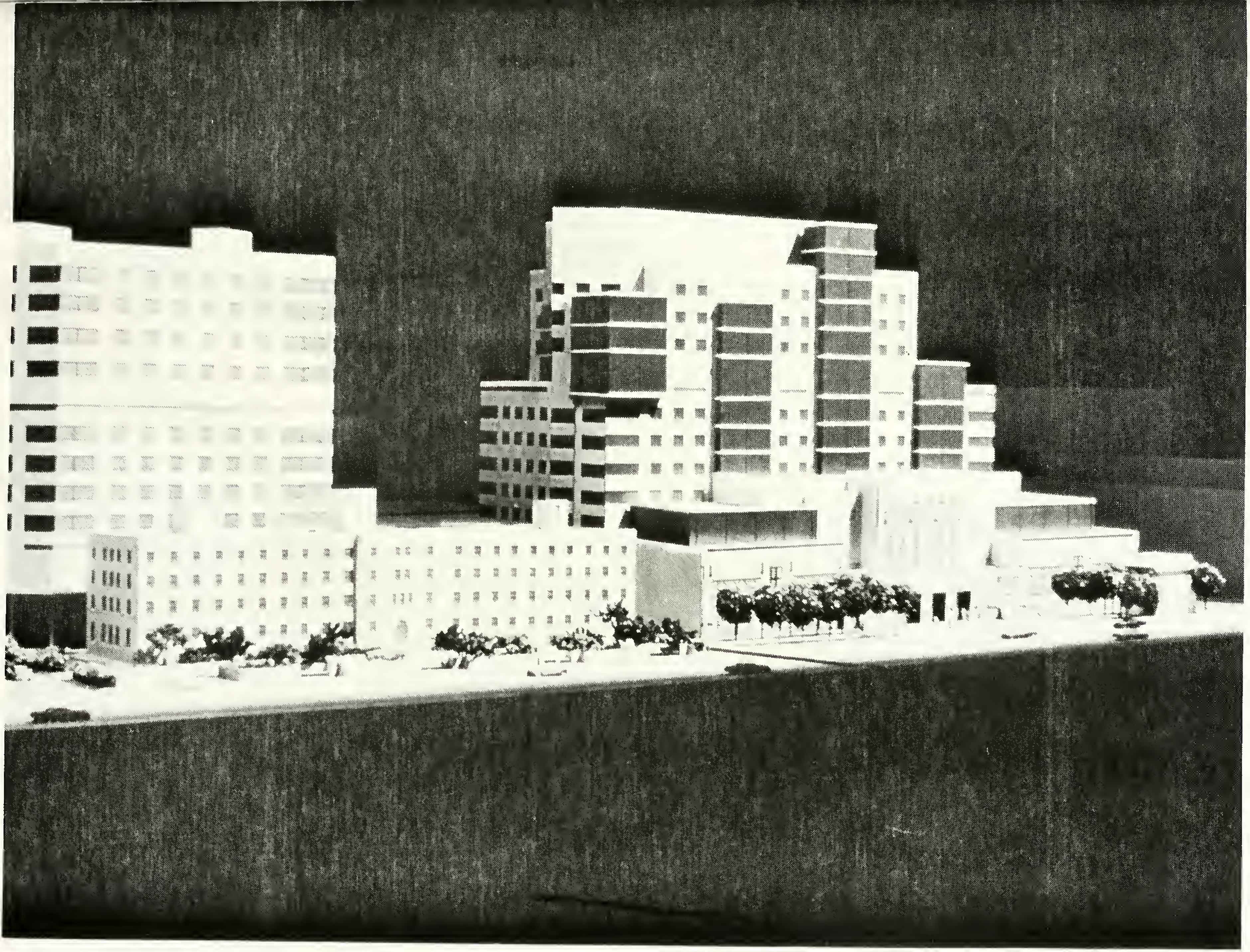
Total Square Feet:	716,500
Medical Square Feet:	380,500
Parking:	900 spaces
Total Development Cost:	$138 million

PUBLIC BENEFITS

Construction Jobs:	300
Permanent Jobs:	650
Housing Linkage:	$1,402,500
Jobs Linkage:	$280,500

CONSTRUCTION SCHEDULE

Construction Start:	1992-III
Construction Completion:	1995-II



AVERY®

NEW ENGLAND MEDICAL CENTER
1-C CLINICAL PROJECT
PHASE ONE

PROJECT DESCRIPTION

Phase One of the NEMC 1-C Project involves the construction of approximately 442,219 gross square feet of clinical space, comprising two connected buildings and an atrium. The North Building, which will provide new in-patient space, will be 237,753 square feet in size. The South Building, which will provide additional ambulatory space, will be comprised of 161,064 square feet. The Atrium will be 43,402 square feet.

Construction on the Project is scheduled is begin November 1992, with completion of the South Building scheduled for November 1994, and completion of the North Building scheduled for November 1995.

DEVELOPMENT TEAM

Project Address:	750 Washington Street
Developer:	New England Medical Center Hospitals
Architect:	Shepley, Bullfinch, Richardson & Abbott

DEVELOPMENT PROGRAM

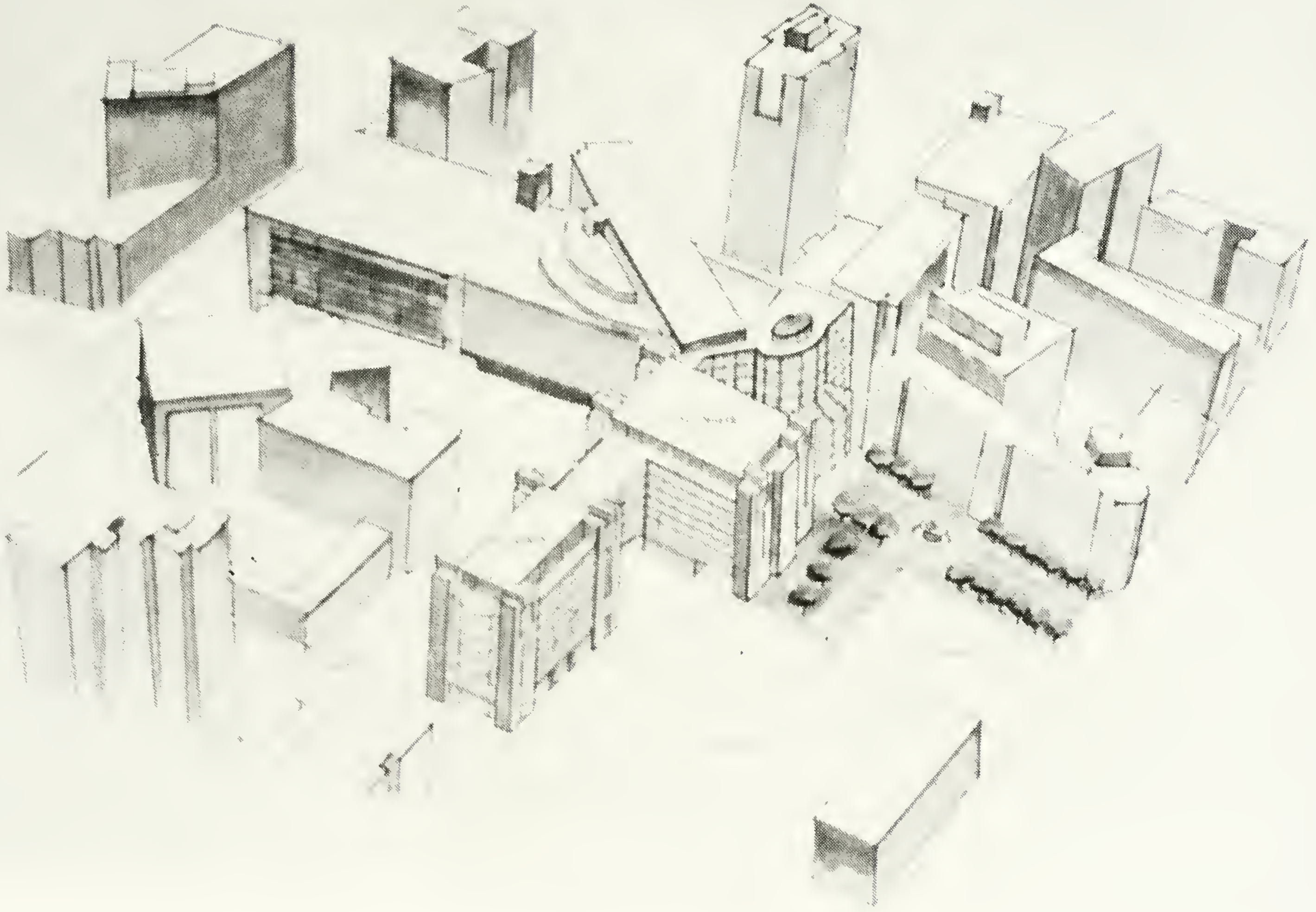
Gross Square Feet:	442,219
Clinical Square Feet:	400,997
Total Development Cost:	$135 million

PUBLIC BENEFITS

Construction Jobs:	777
Permanent Jobs:	837
Housing Linkage:	$1,356,030
Jobs Linkage:	$271,206

CONSTRUCTION SCHEDULE

Construction Start:	1992-IV
Construction Completion:	1995-IV



5053 18